DISCOUNTED CASH FLOW ANALYSIS

Q. Please describe your use of the Discounted Cash Flow approach to determine the cost of equity.

A. Discounted Cash Flow ("DCF") theory seeks to explain the value of an economic or financial asset as the present value of future expected cash flows discounted at the appropriate risk-adjusted rate of return. Thus, if \$100 is to be received in a single payment 10 years subsequent to the acquisition of an asset, and the appropriate risk-related interest rate is 8%, the present value of the asset would be \$46.32 (Value = $\$100 \div (1.08)^{10}$) arising from the discounted future cash flow. Conversely, knowing the present \$46.32 price of an asset (where price = value), the \$100 future expected cash flow to be received 10 years hence shows an 8% <u>annual</u> rate of return implicit in the price and future cash flows expected to be received.

In its simplest form, the DCF theory considers the number of years from which the cash flow will be derived and the annual compound interest rate which reflects the risk or uncertainty associated with the cash flows. It is appropriate to reiterate that the dollar values to be discounted are future cash flows.

DCF theory is flexible and can be used to estimate value/price or the annual required rate of return under a wide variety of conditions. The theory underlying the DCF methodology can be easily illustrated by utilizing the investment horizon associated with a preferred stock not having an annual sinking fund provision. In this case, the investment horizon is infinite, which reflects the perpetuity of a preferred stock. If ***P*** represents price, ***Kp*** is the required rate of return on a preferred stock, and ***D*** is the annual dividend (***P*** and ***D*** with time subscripts), the value of a preferred share is equal to the present value of the dividends to be received in the future discounted at the appropriate risk-adjusted interest rate, ***Kp***. In this circumstance:

$$P_0 = \frac{D_1}{(1 + Kp)} + \frac{D_2}{(1 + Kp)^2} + \frac{D_3}{(1 + Kp)^3} + \ldots + \frac{D_n}{(1 + Kp)^n}$$

If $D_1 = D_2 = D_3 = \ldots D_n$, as is the case for preferred stock, and n approaches infinity, as is the case for non-callable preferred stock without a sinking fund, then this equation reduces to:

$$P_0 = \frac{D_1}{Kp}$$

This equation can be used to solve for the annual rate of return on a preferred stock when the current price and subsequent annual dividends are known. For example, with D_1 = \$1.00, and P_0 = \$10, then Kp = \$1.00 ÷ \$10, or 10%.

The dividend discount equation, first shown, is the generic DCF valuation model for all equities, both preferred and common. While preferred stock generally pays a constant dividend, permitting the simplification subsequently noted, common stock dividends are not constant. Therefore, absent some other simplifying condition, it is necessary to rely upon the generic form of the DCF. If, however, it is assumed that D_1, D_2, $D_3 \ldots D_n$ are systematically related to one another by a constant growth rate *(g)*, so that $D_0 (1 + g) = D_1$, $D_1 (1 + g) = D_2$, $D_2 (1 + g) = D_3$ and so on approaching infinity, and if ***Ks*** (the required rate of return on a common stock) is greater than g, then the DCF equation can be reduced to:

$$P_0 = \frac{D_1}{Ks - g} \quad or \quad P_0 = \frac{D_0\ (1 + g)}{Ks - g}$$

which is the periodic form of the "Gordon" model.[6] Proof of the DCF equation is found in all modern basic finance textbooks. This DCF equation can be easily solved as:

$$Ks = \frac{D_0\ (1 + g)}{P_0} + g$$

which is the periodic form of the Gordon Model commonly applied in estimating equity rates of return in rate cases. When used for this purpose, ***Ks*** is the annual rate of return on common equity demanded by investors to induce them to hold a firm's common stock. Therefore, the variables D_0, P_0 and g must be estimated in the context of the market for equities, so that the rate of return, which a public utility is permitted the opportunity to earn, has meaning and reflects the investor-required cost rate.

Application of the Gordon model with market derived variables is straightforward. For example, using the most recent prior annualized dividend (D_0) of \$0.80, the current price (P_0) of \$10.00, and the investor expected dividend growth rate (g) of 5%, the solution of the DCF formula provides a 13.4% rate of return. The dividend yield component in this instance is 8.4%,

6 Although the popular application of the DCF model is often attributed to the work of Myron J. Gordon in the mid-1950's, J.B. Williams exposited the DCF model in its present form nearly two decades earlier.

and the capital gain component is 5%, which together represent the total 13.4% annual rate of return required by investors. The capital gains component of the total return may be calculated with two adjacent future year prices. For example, in the eleventh year of the holding period, the price per share would be $17.10 as compared with the price per share of $16.29 in the tenth year which demonstrates the 5% annual capital gain yield.

Some DCF devotees believe that it is more appropriate to estimate the required return on equity with a model which permits the use of multiple growth rates. This may be a plausible approach to DCF, where investors expect different dividend growth rates in the near term and long run. If two growth rates, one near term and one long-run, are to be used in the context of a price (P_0) of $10.00, a dividend (D_0) of $0.80, a near-term growth rate of 5.5%, and a long-run expected growth rate of 5.0% beginning at year 6, the required rate of return is 13.57% solved with a computer by iteration.

Q. Are there limitations to the use of the DCF model in the ratesetting process?

A. Yes. In its simplest form, the DCF return on common stocks consists of a current cash (dividend) yield and future price appreciation (growth) of the investment. The cost of equity based on a combination of these two components represents the total return which investors can expect with regard to an equity investment. Among the limitations of the model, there is a certain element of circularity in the DCF when applied in rate cases. This is because investors' expectations for the future depend upon regulatory decisions. In turn, when regulators depend upon the DCF model to set the cost of equity, they rely upon investor expectations which include an assessment of how regulators will decide rate cases. Due to this circularity, the DCF model may not fully reflect the true risk of a regulated company.

In addition, the DCF approach has certain limitations which diminish its usefulness when stock prices diverge significantly from book values in the ratesetting process. This situation is especially troublesome for measuring the cost of equity with the DCF model due to the M&A activity presently sweeping the water utility industry. Water companies have become the targets of acquisition by foreign utilities, domestic energy companies, and other water utilities that are in the process of "rolling-up" the industry. It has been reported that there are approximately 55,000 separate investor-owned and municipal water utility systems in the U.S. There are numerous examples of water utility acquisitions within recent memory. American Water Works Company, Inc. ("AWW") recently completed the $700 million acquisition of National Enterprises, Inc. and, late last year (i.e., October, 1999) announced plans to acquire the water utility assets of Citizens Utilities and SJW Corp. Philadelphia Suburban Corporation has completed the major acquisition of Consumers Water Company. Domestic energy companies have also become interested in entering the water utility business, as exemplified by the purchase of Indianapolis Water Company by NI Source, Minnesota Power's extensive water utility holdings in Florida and North Carolina, and DQE's water utility acquisitions through its AquaSource operations. Enron Corporation has formed Azurix to pursue water utility acquisitions globally; Kelda Group of Leeds England has acquired Aquarion; Thames Water has agreed to purchase E'Town Corporation, and Suez Lyonnaise des Eaux has agreed to purchase all of the remaining shares of UWR that it does not already own.

These acquisitions are being accomplished at premiums offered to induce stockholders to sell their shares -- the Aquarion acquisition was at a 19.3% premium, the E'Town acquisition was at a 20% premium, the SJW Corp. was at a 20+% premium, and the UWR acquisition was at a 54% premium. These premiums create a ripple affect on the stock prices of all water utilities, just like a rising tide lifts all boats. Due to M&A activity, there has been a significant run-up of the stock prices for the water companies. With these elevated stock prices, dividend yields fall, and without some adjustment to the growth component of the DCF model, the results become unduly depressed by reference to alternative investment opportunities -- such as public utility bonds.

Q. Can you demonstrate how the DCF model can produce results that fail to provide a fair rate of return in the ratesetting context?

A. When the difference between share values and book values is significant, the results from the DCF can result in a misspecified cost of equity when those results are applied to book value. This is because investor expected returns, as described by the DCF model, are related to the market value of common stock. This discrepancy is shown by the following example. If it is assumed, hypothetically, that investors require a 12.5% return on their common stock investment value (i.e., the market price per share) when share values represent 150% of book value, investors would require a total annual return of $1.50 per share on a $12.00 market value to realize their expectations. If, however, this 12.5% market-determined cost rate is applied to an original cost rate base which is equivalent to the book value of common stock of $8.00 per share, the utility's actual earnings per share would be only $1.00. This would result in a $.50 per share earnings shortfall which would deny the utility the ability to satisfy investor expectations.

As a consequence, a utility could not withstand these DCF results applied in a rate case and also sustain its financial integrity. This is because $1.00 of earnings per share and a 75% dividend payout ratio would provide earnings retention growth of just 3.125% (i.e., $1.00 x .75 = $0.75, and $1.00 - $0.75 = $0.25 ÷ $8.00 = 3.125%). In this example, the earnings retention growth rate plus the 6.25% dividend yield ($0.75 ÷ $12.00) would equal 9.375% (6.25% + 3.125%) as indicated by the DCF model. This DCF result is the same as the utility's rate of dividend payments on its book value (i.e., $0.75 ÷ $8.00 = 9.375%). This situation provides the utility with no earnings cushion for its dividend payment because the DCF result equals the dividend rate on book value (i.e., both rates are 9.375% in the example). Moreover, if the price employed in my example were higher than 150% of book value, a "negative" earnings cushion would develop and cause the need for a dividend reduction because the DCF result would be less than the dividend rate on book value. For these reasons, the usefulness of the DCF method significantly diminishes as market prices and book values diverge.

Further, there is no reason to expect that investors would necessarily value utility stocks equal to their book value. In fact, it is rare that utility stocks trade at book value. Moreover, high market-to-book ratios may be reflective of general market sentiment. Were regulators to use the results of a DCF model that fails to produce the required return when applied to an original cost rate base, they would harm a company with high market-to-book ratios. This clearly would penalize a regulated firm and its investors that purchased the stock at its current price. When investor expectations are not fulfilled, the market price per share will decline and a new, different equity cost rate would be indicated from the lower price per share. This condition suggests that the current price would be subject to disequilibrium and would not allow a reasonable calculation of the cost of equity. This situation would also create a serious disincentive for management initiative and efficiency. Within that framework, a perverse set of goals and rewards would result, i.e., a high authorized rate of return in a rate case would be the reward for poor financial performance, while low rates of return would be the reward for good financial performance. As such, the DCF results should not be used alone to determine the cost of equity, but should be used along with other complementary methods.

Q. Are there means available to remedy the anomalous results presently being shown by the DCF model for the water companies?

A. Yes. There are three remedies available to deal with the anomalous DCF results for the water companies due to the high stock prices that can be traced to M&A activity. Those remedies are: (i) an adjustment to the DCF model to reflect the divergence of stock price and book value, (ii) the use of a growth component in the DCF model which is at the high end of the range, (iii) supplementing the DCF results with other measures of the cost of equity, and (iv) use of additional barometer groups to measure the cost of equity. My testimony employs each of these remedies in order to deal with the anomalous results of the DCF model for the water companies. When stock prices diverge from book values by a significant margin, the DCF method will lead to a misspecified cost of equity, unless an adjustment is made to accommodate a book value return that is different from the market value return. If regulators rely upon the results of the

DCF (which are based on the market price of the stock of the companies analyzed) and apply those results to a net original cost (book value) rate base, the resulting earnings will not produce the level of required return specified by the model when market prices vary from book value. That is to say, such distortions tend to produce DCF results that understate the cost of equity to regulated firms when using a book value rate base. As I propose later in my testimony, the DCF model can be modified to account for differences in risk attributed to the divergence of market prices and book values.

Q. Please explain the dividend yield component of the DCF analysis.

A. The DCF methodology requires the use of an expected dividend yield to establish the investor-required cost of equity. The historical annual dividend yields for the Water Group and the Public Utility Group are shown on Schedules 3 and 4. The 1994-1998 five-year average dividend yield was 5.1% for the Water Group and 4.7% for the Public Utility Group. The monthly dividend yields for the past twelve months are shown graphically on Schedule 6. For the twelve months ending January 2000, the average dividend yield was 3.57% for the Water Group and 4.70% for the Public Utility Group based upon a calculation using annualized dividend payments and adjusted month end stock prices. The dividend yields for the more recent six and three month periods were 3.30% and 3.31%, respectively, for the Water Group and 4.91% and 5.21%, respectively, for the Public Utility Group. I have used, for the purpose of my direct testimony, a representative dividend yield of 3.30% for the Water Group and 4.90% for the Public Utility Group. The dividend yield that I have used is reflective of the six-month averages as noted above. The use of a representative dividend yield will reflect current capital cost rates while avoiding spot yields. These dividend yields reflect an adjustment to the month-end closing prices to remove the pro rata accumulation of the quarterly dividend amount since the last ex-dividend date.

The ex-dividend date usually occurs three business days before the record date of the dividend (i.e., the date by which a shareholder must own the shares to be entitled to the dividend payment--usually about two to three weeks prior to the actual payment). During a quarter (here defined as 91 days), the price of a stock moves up rateably by the dividend amount as the ex-dividend date approaches. The stock's price then falls by the amount of the dividend on the ex-dividend date. Therefore, it is necessary to calculate the fraction of the quarterly dividend since the time of the last ex-dividend date and to remove that amount from the price. This adjustment reflects normal recurring pricing of stocks in the market, and establishes a price which will reflect the true yield on a stock.

Q. Have you adjusted these historical average dividend yields to position them in a forward-looking manner required by the DCF model?

A. Yes. The representative dividend yields based upon generally the six months averages have been used in the ratesetting process as explained above. These average dividend yields must be adjusted to reflect the prospective nature of the dividend payments, i.e., the higher expected dividends for the future rather than the recent dividend payment annualized. An adjustment to the dividend yield component, when computed with annualized dividends, is required based upon investor expectation of quarterly dividend increases.

The procedure to adjust the average dividend yield for the expectation of a dividend increase during the initial investment period will be at a rate of one-half the growth component, developed below. The DCF equation, showing the quarterly dividend payments as D_0, may be stated in this fashion:

$$K = \frac{D_0\ (1 + g)^0 + D_0\ (1 + g)^0 + D_0\ (1 + g)^1 + D_0\ (1 + g)^1}{P_0} + g$$

The adjustment factor, based upon one-half the expected growth rate developed later in my direct testimony, will be 3.000% (6.00% × .5) for the Water Group, and 3.125% (6.25% × .5) for the Public Utility Group which assumes that two dividend payments will be at the expected higher rate during the initial investment period. Using the representative average dividend yield as a base, the prospective (forward) dividend yield would be 3.40% (3.30% × 1.03000) for the Water Group and 5.05% (4.90% × 1.03125) for the Public Utility Group.

Another DCF model that reflects the discrete growth in the quarterly dividend (D_0) is as follows:

$$K = \frac{D_0\ (1 + g)^{.25} + D_0\ (1 + g)^{.50} + D_0\ (1 + g)^{.75} + D_0\ (1 + g)^{1.00}}{P_0} + g$$

This procedure confirms the reasonableness of the forward dividend yield previously calculated. The quarterly discrete adjustment provides a dividend yield of 3.42% (3.30% × 1.03723) for the Water Group and 5.09% (4.90% × 1.03877) for the Public Utility Group. The use of an adjustment is required for the periodic form of the DCF in order to properly recognize that dividends grow on a discrete basis.

In either of the preceding DCF dividend yield adjustments, there is no recognition for the compound returns attributed to the quarterly dividend payments. Investors have the opportunity to reinvest quarterly dividend receipts. Recognizing the compounding of the periodic quarterly dividend payments (D_0), results in a third DCF formulation:

$$k = \left[\left(1 + \frac{D_0}{P_0} \right)^4 - 1 \right] + g$$

This DCF equation provides no further recognition of growth in the quarterly dividend. Combining discrete quarterly dividend growth with quarterly compounding would provide the following DCF formulation, stating the quarterly dividend payments (D_0):

$$k = \left[\left(1 + \frac{D_0 \, (1 + g)^{.25}}{P_0} \right)^4 - 1 \right] + g$$

A compounding of the quarterly dividend yield provides another procedure to recognize the necessity for an adjusted dividend yield. The unadjusted average quarterly dividend yield was 0.8250% (3.30% ÷ 4) for the Water Group and 1.2250% (4.90% ÷ 4) for the Public Utility Group. The compound dividend yield would be 3.39% (1.00837^4-1) for the Water Group and 5.07% (1.01244^4-1) for the Public Utility Group, recognizing quarterly dividend payments in a forward-looking manner. These dividend yields conform with investors' expectations in the context of reinvestment of their cash dividend.

For the Water Group, a 3.40% forward-looking dividend yield is the average (3.40% + 3.42% + 3.39% = 10.21% ÷ 3) of the adjusted dividend yield using the form $D_0 / P_0 \ (1 + .5g)$, the dividend yield recognizing discrete quarterly growth, and the quarterly compound dividend yield with discrete quarterly growth. For the Public Utility Group, the forward dividend yield would be 5.07% which is the average of the three adjusted dividend yields described above (5.05% + 5.09% + 5.07% = 15.21% ÷ 3).

Q. What are some of the considerations required to assess the growth rate component of a DCF?

A. If viewed in its infinite form, the DCF model is represented by the discounted value of an endless stream of growing dividends. It would, however, require 100 years of future dividend payments so that the discounted value of those payments would equate to the present price so that the discount rate and the rate of return shown by the simplified Gordon form of the DCF model would be about the same. A century of dividend receipts represents an unrealistic investment horizon from almost any perspective. Because stocks are not held by investors forever, the growth in the share value (i.e., capital appreciation, or capital gains yield) is most relevant to *investors' total return expectations. Hence, investor expected returns in the equity market are* provided by capital appreciation of the investment as well as receipt of dividends. As such, the sale price of a stock can be viewed as a liquidating dividend which can be discounted along with the annual dividend receipts during the investment holding period to arrive at the investor expected return.

Q. What data do investors employ in developing expectations of growth for a firm?

A. In its constant growth form, the DCF assumes that with a constant return on book common equity and constant dividend payout ratio, a firm's earnings per share, dividends per share and book value per share will grow at the same constant rate, absent any external financing by a firm. Because these constant growth assumptions do not actually prevail in the capital markets, the capital appreciation potential of an equity investment is best measured by the expected growth in earnings per share. Since the traditional form of the DCF assumes no change in the price-earnings multiple, the value of a firm's equity will grow at the same rate as earnings per share. Hence, the capital gains yield is best measured by earnings per share growth using company-specific variables.

Investors consider both historical and projected data in the context of the expected growth rate for a firm. An investor can compute historical growth rates using compound growth rates or growth rate trend lines. Otherwise, an investor can rely upon published growth rates as provided in widely-circulated, influential publications. However, a traditional constant growth DCF analysis that is limited to such inputs suffers from the assumption of no change in the price-earnings multiple, i.e., that the value of a firm's equity will grow at the same rate as earnings. Some of the factors which actually contribute to investors' expectations of earnings growth and which should be considered in assessing those expectations, are: (i) the earnings rate on existing equity, (ii) the portion of earnings not paid out in dividends, (iii) sales of additional common equity, (iv) reacquisition of common stock previously issued, (v) changes in financial leverage, (vi) acquisitions of new business opportunities, (vii) profitable liquidation of assets, and (viii) repositioning of existing assets. The realities of the equity market regarding total return expectations, however, also reflect factors other than these inputs. Therefore, the DCF model contains overly restrictive limitations when the growth component is stated in terms of earnings per share (the basis for the capital gains yield) or dividends per share (the basis for the infinite dividend discount model). In these situations, there is inadequate recognition of the capital gains yields arising from stock price growth which could exceed earnings or dividends growth.

As explained above, analysts' projections of future growth influence investor expectations of their growth within the DCF model. One influential publication is The Value Line Investment Survey which contains estimated future projections of growth. The Value Line Investment Survey provides growth estimates which are stated within a common economic environment for the purpose of measuring relative growth potential. The basis for these projections is the Value Line 3 to 5 year hypothetical economy. The Value Line hypothetical economic environment is represented by components and subcomponents of the National Income Accounts which reflect in the aggregate assumptions concerning the unemployment rate, manpower productivity, price inflation, corporate income tax rate, high-grade corporate bond interest rates, and Fed policies. Individual estimates begin with the correlation of sales, earnings and dividends of a company to appropriate components or subcomponents of the future National Income Accounts. These calculations provide a consistent basis for the published forecasts. Value Line's evaluation of a specific company's future prospects are considered in the context of specific operating characteristics that influence the published projections. Of particular importance for regulated firms, Value Line considers the regulatory quality, rates of return recently authorized, the historic ability of the firm to actually experience the authorized rates of return, the firm's budgeted capital spending, the firm's financing forecast, and the dividend payout ratio. The wide circulation of this source and frequent reference to Value Line in financial circles indicate that this publication has an influence on investor judgment with regard to expectations of future growth.

Another source of forecast earnings growth is the Institutional Brokers Estimate System ("I/B/E/S"). The I/B/E/S service provides data on consensus earnings per share forecasts and five-year earnings growth rate estimates. The earnings estimates are obtained from financial analysts at brokerage research departments and from institutions whose securities analysts are projecting earnings for companies in the I/B/E/S universe of companies. The I/B/E/S forecasts provide the basis for the earnings estimates published in the S&P Earnings Guide which covers 3000 publicly traded stocks. Another service that tabulates earnings forecasts and publishes consensus forecasts in Zacks Investment Research. As with the I/B/E/S forecasts, Zacks provides consensus forecasts collected from analysts for over 6000 publically traded companies.

In each of these publications, forecasts of earnings per share for the current and subsequent year receive prominent coverage. That is to say, I/B/E/S, Zacks, and Value Line show estimates of current-year earnings and projections for the next year. While the DCF model typically focusses upon long-run estimates of growth, stock prices are clearly influenced by current and near-term earnings prospects. Therefore, the near-term earnings per share growth rates should also be factored into a growth rate determination.

Although forecasts of future performance are investor influencing[7], equity investors may also rely upon the observations of past performance. Investors' expectations of future growth rates may be determined, in part, by an analysis of historical growth rates. It is apparent that any serious investor would advise himself/herself of historical performance prior to taking an investment position in a firm. Earnings per share and dividends per share represent the principal financial variables which influence investor growth expectations.

Other financial variables are sometimes considered in rate case proceedings. For example, a company's internal growth rate, derived from the return rate on book common equity and the related retention ratio, is sometimes considered. This growth rate measure is represented by the Value Line forecast "$B \times R$" shown on Schedule 8. Pages 3 and 4 of Schedule 7 provides historical values of internal growth. Internal growth rates are often used as a proxy for book value growth. Unfortunately, this measure of growth is often not reflective of investor-expected growth. This is especially important when there is an indication of a prospective change in dividend payout ratio, earned return on book common equity, change in market-to-book ratios or other fundamental changes in the character of the business. Nevertheless, I have also shown the historical and projected growth rates in book value per share and internal growth rates.

Q. What investor-expected growth rate is appropriate in a DCF calculation?

A. While some DCF devotees would advocate that mathematical precision should be followed when selecting a growth rate (i.e., precise input variables often considered within the confines of retention growth), the fact is that investors, when establishing the market prices for a firm, do

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[7] As shown in a National Bureau of Economic Research monograph by John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices, University of Chicago Press 1982.

not behave in the same manner assumed by the constant growth rate models using accounting values. Rather, investors consider both company-specific variables and overall market sentiment (i.e., level of inflation rates, interest rates, economic conditions, etc.) when balancing their capital gains expectations with their current dividend yield requirements. Some regulatory agencies have also acknowledged that a blended approach which recognizes the preceding factors is required in the selection of the DCF growth rate. I have followed an approach that is not rigidly formatted, because investors do not behave in such a manner. Therefore, in my opinion, all relevant growth rate indicators using a variety of techniques should be evaluated when formulating a judgment of investor expected growth.

Q. Are there unusual factors that have an impact on investors' growth expectations for the water utility companies?

A. Yes. The M&A activity described earlier has a significant impact on investor expected growth, as reflected in the prices of the water utility stocks. As a consequence, there has been the run-up in stock prices related to M&A expectations, either announced or anticipated. This price action has fundamentally changed the investment horizon associated with investors' growth expectations for the water utilities. Investment horizons have shortened considerably in the context of prices offered in the proposed M&A transactions. In the usual application of the DCF model, investors expectations are sometimes considered in the context of an infinite number of growing future dividends. However, when a company is the target of an acquisition, such as Aquarion, E'Town, SJW, or UWR, a more defined number of cash flows is reflected in the stock price with particular emphasis being placed on the acquisition price (i.e., the liquidating dividend) of the stock. That is to say, today's stock price is the product primarily of the buy-out price of the stock. As such, the long-term horizon of future dividend payments ceases to be the focus of investors. Rather, the acquisition price becomes the paramount consideration in the current stock price because the future value of the stock is established by reference to the acquisition price along with dividend payments that occur up to the time the company is acquired and its stock no longer trades.

When a premium is offered in order to obtain control of a target company and to induce existing stockholders to sell their shares, the stock price disconnects from the earnings forecasts made by securities' analysts when the target company operated independently. After the combination occurs in the merger/acquisition, the surviving company will be able to attain increased shareholder value through economics of scope and scale that increase productivity and profitability to the point where earnings growth will exceed that which was attainable by the pre-merger company. Synergies, such as those mentioned above, are the reasons that acquiring companies can offer premiums over pre-announcement stock prices and still anticipate that the acquisition will be accretive to earnings and add shareholder value. Otherwise, acquisitions at premiums would not be economically feasible. While the circumstances described above apply directly to target companies that have agreed to be acquired, similar expectations are reflected in the stock prices of other water utilities that represent potential candidates for acquisition. That is to say, the stock prices of many water utilities include some expectation that they may become the target of a takeover during the consolidation of the water utility industry.

Q. What data have you considered in your growth rate analysis?

A. I have considered both historical performance and analysts' forecasts to support my opinion of the growth expected by investors. The bar graph provided on Schedule 7 shows the historical growth rates in earnings per share, dividends per share, book value per share, and cash flow per share. Value Line serves primarily as the source of the historical growth rates shown on Schedule 7. These growth rates have been supplemented with historical earnings per share growth published by Zacks which only publishes historical earnings per share growth rates. As shown on page 1 of Schedule 7, the historical earnings per share growth rates were in the range of 3.75% to 5.50% for the Water Group. As shown on page 2, the range of earnings per share growth for the Public Utility Group was 1.31% to 5.36%. The historical growth rates in earnings per share contain some instances of negative values for individual companies within the Water Group and Public Utility Group. Obviously, negative growth rates provide no reliable guide to gauge investor expected growth for the future, and as such the historical values shown on pages 1 and 2 of Schedule 7 understate investors' expectations for the future. Investor expectations always encompass long-term positive growth rates and, as such, could not be represented by sustainable negative rates of change. Stated simply, there is no reason for investors to expect that a utility will wind up its business and distribute its common equity capital to shareholders, which would be symptomatic of a long-term permanent earnings decline. Because in the long-run rational investors will always expect positive growth, the knowledge that negative growth and losses can occur does not alter the fact that they will hold cash rather than invest with the expectation of a loss.

Schedule 8 shows both long-run and short-run earnings per share growth rates taken from the forecasts provided in the I/B/E/S, Zacks, and Value Line publications. The I/B/E/S and Zacks forecasts are restricted to earnings per share growth, while Value Line makes projections of other financial variables. The Value Line forecasts of dividends per share, book value per share, and cash flow per share have also been included on pages 1 and 2 of Schedule 8.

Although long-run forecasts usually receive the most attention in the growth analysis for DCF purposes, present market performance has been strongly influenced by short-term earnings forecasts. Each of the major publications provide earnings forecasts for the current and subsequent years. As reported on pages 3 and 4 of Schedule 8, these short-term earnings forecasts receive prominent coverage, and indeed they dominate these publications. The short-term earnings forecasts indicate growth of 5.60% to 7.40% for the Water Group and 8.90% to 13.40% for the Public Utility Group. While the DCF model typically focuses upon long-run estimates of earnings, stock prices are clearly influenced by current and near-term earnings forecasts.

As to five year forecast growth rates, page 1 of Schedule 8 indicates that the projected earnings per share growth rates for the Water Group are 4.78% by Zacks, 5.40% by I/B/E/S and 7.25% by Value Line. For the Public Utility Group, the five year earnings per share growth rates are 5.89%, 6.57% and 8.64%, respectively, by Zacks, I/B/E/S and Value Line. The Value Line projections indicate that earnings per share will grow prospectively at a more rapid rate (i.e., 7.25% for the Water Group and 8.64% for the Public Utility Group) than dividends per share (i.e., 3.88% for the Water Group and 4.57% for the Public Utility Group) which indicates a declining dividend payout ratio in the future. With no expected change in price-earnings multiple, the value of a firm's equity (i.e., its stock price) will grow at the same rate as earnings per share, thus producing a capital gains yield to investors at the higher earnings per share growth rate. In addition, the growth rates forecast for cash flow per share are 6.38% for the Water Group and 7.00% for the Public Utility Group.

Q. What conclusions have you drawn from these data?

A. Historical performance and published forecasts support my opinion that a company-specific growth rate of 6.00% is indicated for the Water Group and 6.25% is appropriate for the Public Utility Group. While the DCF growth rate cannot be established solely with a mathematical formulation, the prospective growth rate for the Water Group and Public Utility Group is within the array of growth rates shown by earnings per share, dividends per share, book value per share, retention growth, and cash flow per share.

In addition, market-wide factors also influence the capital gains expected by investors. As previously indicated, there are a wide variety of factors that influence investor-expected returns which are not linked specifically to company-specific performance. In an article in Standard & Poor's <u>The Outlook</u> (February 21, 1996), the relative valuation of common stocks was explained in part by qualitative factors (i.e., favorable psychology). Those factors which influence investor-expected growth include overall business conditions, monetary policy, fiscal and tax policy, the value of the dollar in foreign trade, the balance of trade, and the phase of the stock market (e.g., a bull or bear market), all of which I would categorize, at least from an investor's perspective, as qualitative influences on investors' total return expectations. In addition, investors make independent valuation assessments based upon market sentiment which includes relative P/Es, dividend yields, interest rates, the supply of stocks, etc. The combination of both quantitative factors, as shown by company-specific variables, and qualitative factors, as shown by general investor sentiment, together form the foundation for the capital appreciation (i.e., capital gains yield) that investors expect from owning a common stock.

In addition, opportunities will surely develop for the water utility business beyond the five-year horizon typically considered by the analysts' forecasts. The expectations of investors in the water utility industry have been dominated by growth related to consolidation, privatization, and municipal operating contracts. Privatization and municipal operating contracts provide growth for the water industry through either direct acquisitions of municipal systems or through efficiencies obtained by the operation of municipal systems by investor-owned water companies. Moreover, expectations concerning merger and acquisition ("M&A") activities also impact stock prices. In that case, the traditional DCF calculation would understate the required cost of equity. This provides further justification for an adjustment to the simplified DCF cost rate. For the water utility industry, M&A activity has elevated stock prices based upon investors' expectations of enhanced market returns that arise from those combinations. M&A premiums that become embedded in stock prices usually result in a disconnection of those prices from the analysts' growth forecasts.

Q. In the development of a rate of return on common equity in the ratesetting context, should another component be included in the DCF model of the cost of equity?

A. Yes. As noted previously and as demonstrated, the divergence of stock prices from book values creates a conflict within the DCF model when the results of a market-derived cost of equity are applied to a utility's common equity account measured at book value in the ratesetting context. This is the situation today where the market price of stock exceeds its book value for most public utilities. This divergence of price and book value also creates a financial risk difference, whereby the capitalization of a utility measured at its market value contains relatively less debt and more equity than the capitalization measured at its book value. It is a well accepted fact of financial theory that a relatively higher proportion of equity in the capitalization will result in less financial risk than another capital structure more heavily weighted with debt. This is the situation for the Water Group and Public Utility Group where the market value of their capitalization contains far more equity than is shown by the book capitalization. The following comparison demonstrates this situation where the market capitalization is developed by taking the "Fair Value of Financial Instruments" (Disclosures about Fair Value of Financial Instruments -- Statement of Financial Accounting Standards ("FAS") No. 107) as shown in the annual report of each company and the market value of the common equity, as represented by the number of shares outstanding and the market price of stock. The comparison of capital structure ratios are:

	Water Group		Public Utility Group	
	Capitalization at Market Value/Fair Value	Capitalization at Carrying Amounts	Capitalization at Market Value/Fair Value	Capitalization at Carrying Amounts
Debt	35.40%	51.50%	33.26%	50.03%
Preferred Stock	0.98	1.43	0.50	0.78
Common Equity	63.62	47.07	66.24	49.19
Total	100.00%	100.00%	100.00%	100.00%

With regard to the capital structure ratios represented by the carrying amounts shown above, there are some variances from the ratios shown on Schedules 3 and 4. These variances arise from the use of balance sheet values in computing the capital structure ratios shown on Schedules 3 and 4, while the Carrying Amounts of the Financial Instruments according to FAS 107 were used in the calculations shown above (the Carrying Amounts were used in the table shown above to be comparable to the Fair Value amounts used in the comparison calculations).

Q. What are the implications of the capital structure ratios measured with the market value as compared to the book value of the capitalization?

A. The capital structure ratios of the Water Group and Public Utility Group measured at their carrying amounts (i.e., book value) show considerably more financial leverage, and hence higher risk, than the capitalization measured at their market values. This means that the cost of equity using market models, such as DCF and CAPM, reflect a level of financial risk that is different from that shown by the book capitalization. Hence, it is necessary to adjust the market-determined cost of equity upward to reflect the higher financial risk related to the book value capitalization used for ratesetting purposes. Failure to make this modification would result in a mismatch of the lower financial risk related to market value used to measure the cost of equity and the higher financial risk of the book value capital structure used in the ratesetting process. That is to say, the rate of return on common equity for the Water Group that is related to the 47.07% common equity ratio using book value has much higher financial risk than the 63.62% common equity ratio using market values. A similar situation exists for the Public Utility Group. Because the ratesetting process utilizes the book value capitalization, it is necessary to adjust the market-determined cost of equity for the higher financial risk related to the book value of the capitalization.

Q. How is the market determined cost of equity adjusted for the financial risk associated with the book value of the capitalization?

A. In pioneering work, Modigliani and Miller developed several theories about the role of leverage in a firm's capital structure. As part of that work, Modigliani and Miller established that as the borrowing of a firm increases, the expected return on stockholders' equity also increases. This principle is incorporated into my leverage adjustment which recognizes that the expected return on equity increases to reflect the increased risk associated with the higher financial leverage shown by the book value capital structure, as compared to the market value capital structure that contains lower financial risk. Modigliani and Miller proposed several approaches to quantify the equity return associated with various degrees of debt leverage in a firm's capital structure. These formulas point toward an increase in the equity return associated with the higher financial risk.

Q. How can the Modigliani and Miller theory be applied to calculate the rate of return on book common equity using the market derived cost of equity as a starting point?

A. It is necessary to first calculate the cost of equity for a firm without any leverage. The cost of equity for an unleveraged firm using the capital structure ratios calculated with market values is:

$$ku = ke - (((ku - i)\,1\text{-}t)\;D / E) - (ku - d)\;P / E$$

Water Group $8.93\% = 9.40\% - (((8.93\% - 7.74\%).65)\;35.40\%/63.62\%) - (8.93\% - 6.62\%)\;0.98\%/63.62\%$

Public Utility Group $10.42\% = 11.32\% - (((10.42\% - 7.74\%).65)\;33.26\%/66.24\%) - (10.42\% - 6.62\%)\;0.50\%/66.24\%$

where ***ku*** = cost of equity for an all-equity firm, ***ke*** = market determined cost equity[8], ***i*** = cost of debt[9], ***d*** = dividend rate on preferred stock[10], ***t*** = income tax rate, ***D*** = debt ratio, ***P*** = preferred stock ratio, and *E* = common equity ratio. The formula shown above indicates that the cost of equity for a firm with 100% equity is 8.93% using with the market value of the Water Group's capitalization and 10.42% for the Public Utility Group.

Having determined that the cost of equity for the Water Group is 8.93% and 10.43% for the Public Utility Group when the equity ratio is 100%, I then calculated the rate of return on common equity using the book value capital structure. This provides:

ke = ku + (((ku - i) 1-t) D / E) + (ku - d) P / E

Water Group 9.84% = 8.93% + (((8.93% -7.74%).65) 51.50%/47.07%) + (8.93% -6.62%) 1.43%/47.07%

Public Utility Group 12.25% = 10.42%+ (((10.42%-7.74%).65) 50.03%/49.19%) + (10.42%-6.62%)0.78%/49.19%

Hence the Modigliani and Miller theory shows that the cost of equity increases by 0.44% (9.84% - 9.40%) when the common equity ratio declines from 63.62% to 47.07% for the Water Group and by 0.93% (12.25% = 11.32%) when the common equity ratio declines from 66.24% to 49.19% for the Public Utility Group.

Q. Please provide the DCF return based upon your preceding discussion of dividend yield, growth, and leverage.

A. As previously explained, I have utilized a representative dividend yield ("D_1/P_0") adjusted in a forward-looking manner for my DCF calculation. This dividend yield is used in conjunction with

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8 The market determined cost of equity in this instance is the sum of the dividend yield and growth rate (i.e., 3.40% + 6.00% = 9.40% and 5.07% + 6.25% = 11.32%)

9 The cost of debt is the twelve month average yield on Moody's A rated public utility bonds.

10 The cost of preferred is the twelve month average yield on Moody's "a" rated preferred stock.

the growth rate ("*g*") previously developed. The DCF also includes the leverage modification ("*lev.*") to recognize that the book value equity ratio is used in the ratesetting process rather than the market value equity ratio related to the price of stock. The resulting DCF cost rate is:

	D_1/P_0	+	g	+	*lev.*	=	k
Water Group	3.40%	+	6.00%	+	0.44%	=	9.84%
Public Utility Group	5.07%	+	6.25%	+	0.93%	=	12.25%

I should note that the DCF results shown above do not contain a flotation cost adjustment factor that provides an additional increment to the rate of return on equity. Failure to recognize a flotation cost adjustment would not give a utility a realistic opportunity to earn to the return required by investors. The DCF result shown above also represents the simplified form of the model which contains a constant growth assumption. I should reiterate, however, that the DCF indicated cost rate provides an explanation of the rate of return on common stock market prices without regard to the prospect of a change in the price-earnings multiple. An assumption that there will be no change in the price-earnings multiple is not supported by the realities of the equity market since price-earnings multiples do not remain constant.

RISK PREMIUM ANALYSIS

Q. Please describe your use of the Risk Premium approach to determine the cost of equity.

A. The Risk Premium analysis of the cost of equity is represented by the combination of a firm's borrowing rate for long-term debt plus a premium that is required to reflect the additional risk associated with the equity of a firm. The cost of equity requires recognition of the higher risk of common equity over the lower risk associated with long-term corporate debt. In the case of senior capital, a company contracts for the use of long-term debt at a stated coupon rate for a specific period of time and in the case of preferred stock at a stated dividend rate, usually with provision for redemption through sinking fund requirements. In the case of senior capital, the cost rate is known with a high degree of certainty because the payment for use of this capital is a contractual obligation, and the future schedule of payments is known. In essence, the investor-expected cost of senior capital is equal to the realized return over the entire term of the issue, absent default. Due to the senior nature of the long-term debt of a firm, its cost is lower than the cost of equity due to the prior claim which lenders have on the earnings and assets of a corporation.

The cost of equity, on the other hand, is not fixed, but rather varies with investor perception of the risk associated with the common stock. Because no precise measurement exists as to the cost of equity, informed judgment must be exercised through a study of various market factors which motivate investors to purchase common stock. In the case of common equity, the realized return rate may vary significantly from the expected cost rate due to the uncertainty associated with earnings on common equity. This uncertainty highlights the added risk of a common equity investment.

The Risk Premium approach recognizes the required compensation for the more risky common equity over the less risky secured debt position of a lender. The cost of equity stated in terms of the familiar risk premium approach is:

$$k = i + RP$$

where, the cost of equity *("k")* is equal to the interest rate on long-term corporate debt *("i")* plus an equity risk premium *("RP")* which represents the additional compensation for the riskier common equity.

Q. How should interest rate component of the Risk Premium model be analyzed?

A. Interest rates can be viewed in their traditional nominal terms (i.e., the stated rate of interest) and in real terms (i.e., the stated rate of interest less the expected rate of inflation). Absent consideration of inflation, the real rate of interest is determined generally by supply factors, which are influenced by investors' willingness to forego current consumption (i.e., to save), and demand factors, which are influenced by the opportunities to derive income from productive investments. Added to the real rate of interest is the compensation required by investors for the inflationary impact of the declining purchasing power of their income received in the future. While interest rates are clearly influenced by the changing annual rate of inflation, it is important to note that the expected rate of inflation that is reflected in current interest rates may be quite different than the prevailing rate of inflation.

Rates of interest also vary by the type of interest bearing instrument. Investors require compensation for the risk associated with the term of the investment and the risk of default. The risk associated with the term of the investment is usually shown by the yield curve, i.e., the difference in rates across maturities. The typical structure is represented by a positive yield curve which provides progressively higher interest rates as the maturities are lengthened. Flat (i.e., relatively level rates across maturities) or inverted (i.e., higher short-term rates than long-term rates) yield curves are less frequent. The risk of default typically is associated with the creditworthiness of the borrower. Differences in interest rates in this regard can be traced to the credit quality ratings assigned by the bond rating agencies, such as Moody's Investors Service, Inc. and Standard & Poor's Corporation. Obligations of the United States Treasury are usually considered to be free of default risk, and hence reflect only the real rate of interest, compensation for expected inflation, and maturity risk. The Treasury has recently issued inflation indexed bonds which automatically provide compensation to investors for future inflation, thereby necessitating a lower current yield on this issue.

Q. What factors influence the level of interest rates?

A. Federal Reserve Board ("Fed") policy actions directly impact short-term interest rates and also affect investor sentiment in long-term fixed-income securities markets. In this regard, the Fed has often pursued policies designed to build investor confidence in the fixed-income securities market. Formative Fed policy has had a long history, as exemplified by the historic 1951 Treasury-Federal Reserve Accord, and more recently, deregulation within the financial system that increased the level and volatility of interest rates. The Fed has indicated that it will follow a monetary policy designed to promote noninflationary economic growth.

As background to the recent levels of interest rates, history shows that the Fed began a series of moves toward lower short-term interest rates in mid-1990 -- at the outset of the last recession. Monetary policy was influenced at that time by (i) steps taken to reduce the federal budget deficit, (ii) slowing economic growth, (iii) rising unemployment, and (iv) measures intended to avoid a credit crunch. Thereafter, the Federal government initiated several bold proposals to deal with future borrowings by the Treasury. With lower expected federal budget deficits and reduced Treasury borrowings, together with limitations on the supply of new 30-year Treasury bonds, long-term interest rates declined to a twenty-year low, reaching a trough of 5.78% in October 1993.

On February 4, 1994, the Fed began a series of increases in the Fed Funds rate (i.e., the interest rate on excess overnight bank reserves). The initial increase represented the first rise in short-term interest rates in five years. In a series of seven increases, the Fed Funds rate increased from 3% to 6%. The increases in short-term interest rates also caused long-term rates to move up, continuing a trend which began in the fourth quarter of 1993. The cyclical peak in long-term interest rates was reached on November 7 and 14, 1994 when 30-year Treasury bonds attained an 8.16% yield. Thereafter, long-term Treasury bond yields generally declined reaching a low of 5.96% achieved on January 3, 1996.

Beginning in mid-February 1996, long-term interest rates moved upward from their previous lows. After initially reaching a level of 6.75% on March 15, 1996, long-term interest rates continued to climb and reached a peak of 7.19% on July 5 and 8, 1996. For the period leading up to the 1996 Presidential election, long-term Treasury bonds generally traded within this range. After the election, interest rates moderated, returning to a level somewhat below the previous trading range. Thereafter, in December 1996, interest rates returned to a range of 6.5% to 7.0% which existed for much of 1996.

On March 25, 1997, the Fed decided to tighten monetary conditions through a one-quarter percentage point increase in the Fed Funds rate. This tightening increased the Fed Funds rate to 5.5%, although the discount rate was not changed and remained at 5%. In making this move, the Fed stated that it was concerned by persistent strength of demand in the economy, which it feared would increase the risk of inflationary imbalances that could eventually interfere with the long economic expansion.

In the fourth quarter of 1997, the yields on Treasury bonds began to decline rapidly in response to an increase in demand for Treasury securities caused by a flight to safety triggered by the currency and stock market crisis in Asia. Liquidity provided by the Treasury market makes these bonds an attractive investment in times of crisis. This is because Treasury securities encompass a very large market which provides ease of trading and carry a premium for safety. During the fourth quarter of 1997, Treasury bond yields pierced the psychologically important 6% level for the first time since 1993.

Through the first half of 1998, the yields on long-term Treasury bonds fluctuated within a range of about 5.6% to 6.1% reflecting their attractiveness and safety. In the third quarter of 1998, there was further deterioration of investor confidence in global financial markets. This loss of confidence followed the moratorium (i.e., default) by Russia on its sovereign debt and fears associated with problems in Latin America. While not significant to the global economy in the aggregate, the August 17 default by Russia had a significant negative impact on investor confidence, following earlier discontent surrounding the crisis in Asia. These events subsequently led to a general pull back of risk-taking as displayed by banks growing reluctance to lend, worries of an expanding credit crunch, lower stock prices, and higher yields on bonds of riskier companies. These events contributed to the failure of the hedge fund, Long-Term Capital Management.

In response to these events, the Fed cut the Fed Funds rate just prior to the mid-term Congressional elections. The Fed's action was based upon concerns over how increasing weakness in foreign economies would affect the U.S. economy. As recently as July 1998, the Federal Reserve had been more concerned about fighting inflation than the state of the economy. The initial rate cut was the first of three reductions by the Fed. Thereafter, the yield on long-term Treasury bonds reached a 30-year low of 4.70% on October 5, 1998. Long-term Treasury yields below 5% had not seen since 1967. Unlike the first rate cut that was widely anticipated, the second rate reduction by the Fed was a surprise to the markets. A third reduction in short-term interest rates occurred in November 1998 when the Fed reduced the discount rate to 4.5% and the Fed Funds rate to 4.75%.

All of these events prompted an increase in the prices for Treasury bonds which lead to the low yields described above. Another factor that contributed to the decline in yields on long-term Treasury bonds, was a reduction in the supply of new Treasury issues coming to market due to the Federal budget surplus -- the first in nearly 30 years. The dollar amount of Treasury bonds being issued declined by 30% over a two year period thus resulting in higher prices and lower yields. In addition, rumors of some struggling hedge-funds unwinding their positions further added to the gains in Treasury bond prices.

The financial crisis that spread from Asia to Russia and to Latin America pushed nervous investors from stocks into Treasury bonds, thus increasing demand for bonds, just when supply was slowing. There was also a move from corporate bonds to Treasury bonds to take advantage of appreciation in the Treasury market. This resulted in a certain amount of exuberance for

Treasury bond investments that formerly was reserved for the stock market. Moreover, yields in the fourth quarter of 1998 became extremely volatile as shown by Treasury yields that fell from 5.10% on September 29 to 4.70 percent on October 5, and thereafter returned to 5.10% on October 13. A decline and rebound of 40 basis points in Treasury yields in a two week time frame is remarkable.

Beginning in 1999 and continuing to the present, the Fed reversed its interest rate reductions that were implemented in the fall of 1998. On June 30, 1999, August 24, 1999, November 16, 1999, February 2, 2000, and March 21, 2000, the Fed raised the Fed Funds rate in five 25 basis points increments lifting the rate to 6.00%. This rise in yields reflected a shift in concerns from the threat of a global financial collapse that existed during the second half of 1998, to new concerns that improvement in the emerging market economies and persistent strength in the U.S. economy could push inflation higher. Also, on August 24, 1999, November 16, 1999, February 2, 2000, and March 21, 2000, the Fed increased the discount rate to 5.50%. These actions were taken in response to more normally functioning financial markets, tight labor markets, and a reversal of the monetary ease that was required earlier in response to the global financial market turmoil. In taking its action on February 2, 2000, the Fed's Open Market Committee stated:

> "The Committee remains concerned that over time increases in demand will continue to exceed the growth in potential supply, even after taking account of the pronounced rise in productivity growth. Such trends could foster inflationary imbalances that would undermine the economy's record economic expansion.
>
> Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently

> available, the Committee believes the risks are weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future."

In effect, the Fed Funds rate of 6.00% is now at its highest level since 1995. In addition, the Fed Funds rate is now 125 basis points higher than its low that occurred at the height of the Asian currency and stock market crisis.

Q. How have the policy decisions by the Fed impacted the yields on Treasury and public utility bonds?

A. During the four quarters ended December 1999, the yield on 30-year Treasury bonds was shown by the following measures of central tendency: 5.87% as the average, 5.98% as the median, and 5.78% as the midpoint of the highest (6.48%) and lowest (5.07%) daily yields. The associated distribution of the yields was: 16% of the daily yields were 5.00% to 5.49%, 35% of the daily yields were 5.50% to 5.99%, and 49% of the daily yields were over 6.00%. Indeed, the yield on 30 year Treasury bonds closed the year at 6.48%, a 1.39% increase over the year-end 1998 yield.

As a generalization, all interest rates track to varying degrees of the benchmark yields established by the market for Treasury securities. Public utility bond yields usually reflect the underlying Treasury yield associated with a given maturity plus a spread to reflect the specific credit quality of the issuing public utility. Market sentiment can also have an influence on the spreads as described below. The spread in the yields on public utility bonds and Treasury bonds varies with market conditions, as does the relative level of interest rates at varying maturities shown by the yield curve.